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# THE RHODE ISLAND MEDICAL JOURNAL

Owned and Published by the Rhode Island Medical Society. Issued Monthly

VOLUME I
NUMBER 8 } Whole No. 110 PROVIDENCE, R. I., AUGUST, 1917 PER YEAR $2.00
SINGLE COPY 25 CENTS

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## ORIGINAL ARTICLES

### THE RECOGNITION AND TREATMENT OF SOME CONDITIONS OF THE ANTERIOR FOOT.*


By EDWARD W. BURT, M. D.,
Providence, R. I.


My reasons for presenting to this Society a second paper on foot troubles are two. First, in limiting my earlier paper to flat foot, I omitted the consideration of the anterior foot, and the conditions sometimes found here are often more painful and disabling than those of the longitudinal arch. Secondly, it is not improbable that many of you will, within a few months, have under your care some of the men who will compose the new army which is soon to be raised. While it may be true that "an army marches on its belly," yet it is surely much more nearly true that it marches and performs all its activities on its feet. A hungry or dyspeptic soldier may not only march but fight, yet a soldier with painful feet can neither march nor fight, and it is fully as important to keep the fighting man in condition to fight as to repair him after he has been injured by fighting, so far as his usefulness to the army is concerned.

Of the minor conditions involving pain in the great toe joint I wish to speak briefly. Trauma from stubbing the toe or dropping some heavy object on it. The pain is usually temporary and usually disappears with rest and the simpler applications like hot water, etc. In cases where the pain is of longer duration and particularly where after a week or two the pain recurs, it is probable that we have an injured cartilage. Cartilage is non-vascular and in order for repair to take place blood vessels are extended from the nearest point supplied with blood vessels and the repair made, after which the vessels disappear. During this process motion of the joint causes pain in the vascular area. Hypertrophic changes similar to those seen in the fingers are sometimes observed, and seemingly slight trauma to these joints is a long time painful. Gout while not common is by no means rare.

The two most important conditions of the great toe joint from the standpoint of disability are hallux valgus and hallux rigidus. Hallux rigidus means a rigid or stiff great toe joint. Orthopedic reports from Europe show that this is a very common source of foot disability, particularly in recruits. The two principal symptoms are stiffness and pain. The pain is burning and grinding and may be absent while the joint is at rest, but is aggravated by standing and much more by walking. It is caused by the traumatization of a stiff, inflamed joint.

On examination the joint may be found to be enlarged and movement or pressure causes pain. There is not often much external evidence of inflammation. The movements are limited in all directions by pain, showing an intra-arthritic condition, and the toe is mechanically limited in dorsiflexion. This limitation may vary from a slight one to an absolutely stiff joint. In some cases of long standing the efforts of the patient to limit dorsi-flexion may produce a permanent plantar flexion. There may be no swelling, but usually there is over the dorsal aspect of the metatarsal head a ridge of hyperplastic tissue, probably a traumatic periarthritis. A part of the stiffness is due to protective muscular spasm.

The cause of hallux rigidus may be trauma as stubbing the toe or direct injury to the joint, or it may come from improper shoes. It may be associated with some degree of flat foot, and in these cases the endeavor of the patient to obtain relief by raising the inner border of the foot to relieve the strain on the arch may be a causative factor. It should be remembered that this condition is usually found in young adults.

Treatment. In simple cases relief may be obtained by proper shoes and the limitation of dorsi-flexion of the toe. This may be done by making the sole of the shoe thick enough to

*Read before The Providence Medical Association, May 7, 1917

prevent the painful flexion of the toe, or by incorporating either in the shoe or between the layers of the sole a steel plate. In cases where there is definite flat foot so that plates are used a projection may be brought forward as a part of the plate extending the entire length of the toe. It is important in every case that the flat foot should be corrected. In the old and intractable cases operation should be advised. The method is the same as that for hallux valgus, which will be described later.

In passing it may be well to mention a painful great toe sometimes found in elderly people. In this form while there is pain on walking or standing and in extreme dorsi-flexion there is little or no limitation of motion. Probably the most common cause of pain in the great toe joint is hallux valgus. This literally translated is "out great toe," and clearly describes the deformity. In these days of pointed-toed shoes we are becoming an out-toed race. The normal toe is an "in toe," and may be seen in infants and those who have not worn shoes. The normal great toe is the thumb of the foot and should naturally assume the same relative direction. It is of course evident from observation that the mere fact that the patient has an out toe does not in itself call for interference. However, in a large percentage of these cases symptoms develop which require treatment.

Hallux valgus is practically a dislocation or bending outward of the phalanges of the great toe. This deformity not only leaves the outer condyle prominent but also exposed to pressure from the shoe. In its effort to protect itself nature not only forms a bursa over the joint but also lays down an inflammatory proliferation of the bone. This projection with its bursa forms what is popularly known as a bunion.

The cause of hallux valgus is trauma. This, as in hallux rigidus, may be directly from injury or to improper shoes, i. e., too narrow or too short shoes. Painter suggests that both this and hallux rigidus may be caused by a too long or a too short metatarsal bringing the joint in an incorrect position in the shoe, so that when the foot bends in walking it does not conform to the design of the shoe.

The condition is always bilateral, and while it commences in youth, does not usually occasion discomfort enough to demand operative interference until later in life. It is in this sense a disease of later years as contrasted with hallux rigidus.

It has been shown that the recruit may be able to do the routine without any great discomfort, but that a long march may disable him. This fact should be taken into consideration in the examination of recruits. In private practice your patient comes to you for one or both of two symptoms: pain and deformity. Among women the deformity which forbids them to wear pretty shoes is almost as unbearable as the pain. An examination of the joint reveals the "out toe," the enlarged joint with its overlying bursa. It may or may not be tender to touch and motion and may show no signs of inflammation. It is practically always accompanied by a depressed anterior arch, a point which is usually overlooked by the general surgeon and explains the failure to obtain good results in certain cases. It is safe to say "no anterior arch, no hallux valgus," and regardless of the type of operation performed there will be no satisfactory result unless this deformity is corrected.

In simple cases the treatment may be directed to the correction of the depressed anterior arch, proper shoes which do not press on the joint nor on the end of the toe and a correcting brace of some kind to hold the toe in its normal position. These braces may be of rubber, like an empyema tube or a flat piece of metal fastened to the inside of the shoe or to an innersole. In some cases a night shoe should be worn. A stocking with a separate compartment for the great toe may be of service. My experience leads me to think that most peope who have a hallux valgus severe enough to cause them to consult a surgeon have tried out all these devices and are ready for operative interference. The operation properly done is almost invariably successful in its result.

De Forest Willard in his Surgery of Childhood says, "Any surgeon can put on an efficient plaster jacket, but very few surgeons do." I would paraphrase this by saying that any surgeon can do an efficient operation for hallux valgus, but very few surgeons do. The reason for this is twofold; first, the general surgeon does not have a thorough understanding of the static foot conditions which underlie this deformity and are so great a factor in its cause; and second, they consider it a simple operation, almost minor sur-

gery, and do not bestow upon it the attention and thought which they would upon an abdominal operation.

OPERATION. The operation should always be done with a tourniquet, which not only gives unobstructed field but also saves time and trauma, which are present where sponging is necessary, to say nothing of the greater chance of infection. The preparation is from the mid calf to the toes, and two coats of iodine are used. Nothing but the instruments should go into the wound.

A curved incision about two inches long is made over the joint, commencing in front of the joint at the side and curving upward from one-half to three-quarters of an inch and coming back to the plane of the start. The flap is dissected downwards and the bursa destroyed. An incision is then made into the joint and the toe bent downward and drawn away from the metatarsal head. The tissues around the head are then detached completely and a Gigli saw passed around the bone with the slotted curved hook. The head of the bone is then sawed off, cold saline being poured on the saw to prevent heating. It is important to take off enough or it will be impossible to correct the deformity, and it is equally important not to take off too much. From one-half to five-eighths of an inch is the usual amount. In cases where the saw cannot be passed easily the osteotome may be used with good results. After the bone has been removed the sharp edges should be rounded with a file. This is imperative to secure the best result. Mayo turns in the capsule to avoid ankylosis, but this is not necessary. The capsule is sutured with catgut, not chromicized, and the skin with silk worm gut. Up to this point the operations for hallux rigidus and hallux valgus are identical. In hallux rigidus the toe is pointed upward, that is, overcorrected. In hallux valgus the dressing of the toe is the most important part of the operation. Pieces of cotton are placed between each of the toes, and between the great toe and the next one is placed a plug of gauze large enough to force the toe markedly inward. A throat stick with a plug of gauze under it, forcing the end downward, may be placed under the toe and the foot bandaged. The bandage should come up on the outside of the foot, passing over the dorsum of the foot and over the point of the toe, forcing the toe downward so that when finished the toe points down and in, that is, overcorrected. This is left on for from ten days to two weeks and then the patient may walk with crutches. The patient should then be fitted to plates or pads to correct the static foot condition and proper shoes procured. The points I wish to emphasize are these: (1) Operate with a tourniquet applied; (2) Round the edges of the bone after excision; (3) Put the toe up with the toe pointing in and down; (4) Correct the static foot condition.

There are two painful conditions of the anterior arch. These conditions have been somewhat neglected in the study of foot conditions. The anterior arch is formed by the heads of the metatarsals and the sesamoids under the great toe joint and is highest at the heads of the second and third metatarsals. When standing, the arch flattens and spreads laterally, and when the weight is removed the arch is again forced up by the elasticity of the ligaments. The muscles and the action of the toes aid in this action. There are two disabling conditions of this part of the foot to which I wish to call your attention. The first is metatarsalgia, or Morton's disease. It consists of a cramp-like pain starting from the third or fourth metatarso-phalangeal articulation and radiating in all directions. It may be brought on by a misstep or fatigue or by stepping on a stone or other hard object with a thin soled shoe, that is, trauma. It is never present when the shoes are on, except in long standing cases. When the pain, which is sometimes excruciating, comes on the patient removes his shoes, if possible rubs his foot, bends his toes, and after a little while the pain ceases, leaving little or no soreness. I have had patients sit down on the curbstone on the way to my office and remove their shoes to obtain relief from this pain.

The condition is usually found in one foot only, and more often in women than in men. It is a disease of middle life in most cases. It may be spontaneously cured or become chronic.

The pain is usually due to two factors: first, to the pinching of the nerves between the heads and of the metatarsals, and, secondly, to the strain on the misplaced ligaments connecting the heads. The pain is more often referred to the fourth, due to the fact that the fifth is much shorter and more movable than the other metatarsal heads. The condition can be simulated in

the hand by dorsi flexing the fingers and producing lateral pressure. It is nevertheless true that a badly depressed anterior arch may be present without pain, and, per contra, an apparently normal arch may be the seat of severe pain. The arch may be mobile or may be stiff from an infectious arthritis.

The treatment consists of removing pressure and supporting the anterior arch. The first step, however, is proper shoes. They must be broad enough at the toes to prevent the lateral pressure which is an etiological factor in this condition. The fact that this disease occurs more frequently in women than in children may have its explanation in the high heeled, pointed toed shoes worn by women.

Again, in a narrow shoe the fifth metatarsal overhangs the sole and causes an abnormal elevation, making it doubly imperative that a broad shoe should be worn. The shoe should have a thick sole to protect the anterior arch from trauma. The immediate treatment consists of raising the anterior arch. This is accomplished by a tight strapping around the ball of the foot and a pad of proper thickness under the arch just back of the metatarsal heads. This raises the arch and prevents the metatarsal heads from pinching the nerves between them. For permanent relief, a plate may be made extending from the heel to just behind the metatarsal heads and raised in front to lift them and restore the arch. In some cases the painful metatarsal heads, where the pain is, are excised either by bone forceps or the Gigli saw. This is usually curative, but is almost never necessary and seldom done.

The most important affection of the anterior arch from the standpoint of numbers, at least, and of continuous disability, is a depressed anterior arch without the severe pain of Morton's disease. On examination we find the ball of the foot prominent, the toes contracted and a callous area under some or all of the metatarsal heads. The patient comes to you with a history of a sore anterior foot, painful callous on the ball of the foot, and frequent trips to the chiropodist with only temporary relief. The ball of the foot is tender, and stepping unexpectedly on hard objects like stones may throw the patient to the ground. Walking on hard floors and pavements makes the foot very sore. In the shoe is a hollow made by the prominent ball of the foot. The toes are contracted with callouses on the tops of the toe joints, on the outside of the little toe and under the great toe and along its edge Plantar-flexion of the toes causes pain on the dorsum of the foot, from stretching the shortened tendons, and in old cases the phalangeal joints are often ankylosed in the contracted position, known as hammer toe. The second toe often over rides or under rides. This condition is often accompanied by a depressed longitudinal arch, but in a large percentage of cases is found alone.

The treatment is the same as in Morton's disease: proper shoes, strapping and support to the anterior arch either by a plate as described, a felt and leather pad to raise the arch or a pad of felt on a band of elastic encircling the fore foot. The patient should be encouraged to exercise the foot. These exercises are simple and are directed toward strengthening the muscles of the anterior foot.

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## PROGRESS OF THE YEAR IN THE STUDY OF INTERNAL SECRETIONS WITH REPORT OF FIVE CASES.*

By Arthur H. Ruggles, M. D.,
Providence, R. I.

A little over a year ago I presented before this section a brief report on "Internal Secretions in Mental Disease," citing six cases, showing a perverted function of the endocrine system together with mental disturbance of one kind and another. To-night it might be of some value if I speak briefly of some of the progress which has been made during the past year in the study of the functions of the endocrine system. Perhaps one of the most striking contributions that has been made is that of Robertson, who, in his work in the department of biochemistry and pharmacology, in the University of California, has isolated a substance which he calls tethelin, basing his work on the fact that the most potent stimulators and retarders of growth which have been found were either lipoid or closely related to lipoid in their solubilities. He paid particular attention to the lipoid of the anterior lobe of the pituitary gland and soon found that these glands

*Read before the Section in Medicine, Rhode Island Medical Society, March 27, 1917.

contain a recognizable amount of lipoid and present exceptional physical and chemical characteristics, being soluble in water to the extent of five per cent., soluble in alcohol and ether and yet precipitable from the alcoholic solution by the admixture of a definite proportion of ether, and containing phosphorus and nitrogen in proportion of one to four. In administering this substance he found that it had a distinct effect upon growth. The administration of a 4 mgm. per day by mouth to mice from five weeks onward produced a remarkable change in the velocity and time-relations of growth. The coats in animals fed with tethelin were especially good, the hair being smooth, abundant and glossy at an age when normal animals have already begun to lose their hair and present a coat of shaggy, rough and discolored appearance. These phenomena were strikingly reminiscent of the hypertrophy of the epidermis and hypertrichosis which are such notable features of acromegaly and taken together with the very striking action of tethelin upon the growth of cancer lend color to the supposition that tethelin is a specific stimulant of the growth of epithelial tissue. The work with tethelin encouraged the belief that it might accelerate the healing of wounds or recovery of weight lost during inanition, and the experiments upon mice confirmed this. A single dose subcutaneously administered, accelerated the recovery of weight lost during a brief period of starvation by thirty to fifty per cent., while the administration of tethelin at intervals of from two to three days very markedly accelerated the formation of scar tissue in lesions formed by the excision of small pieces of skin. Further experiments also showed that it is non-antigenic, since, after repeated administrations, fixation tests fail to reveal the presence of any antibodies in the sera of rabbits. It may therefore be administered repeatedly, subcutaneously or intravenously, without danger. As large a dose as 150 mgm. administered intravenously to rabbits produces no ill effects other than a slight and transient rise in blood pressure, and increase in the amplitude of the heart beat. When we consider this new work we see that the possibilities are very great, and when we realize that already it has been repeatedly demonstrated in the general practice of medicine, following work in the laboratory, that the administration of the posterior pituitary hormone, under its various names, will hasten labor, will prevent postpartum hemorrhage and uterine subinvolution, stimulate the flow of milk and occasionally abort a mammary abscess, increase heart action and raise blood pressure and produce marked diuresis, we realize what a valuable addition we have to our therapeutic armamentarium as a result of the studies of the function of the pituitary gland.

Just a word as to the problem of the adrenal gland activity, three of the cases which I shall report having to do with a possible hypo-function of this gland. Lictwitz in 1907 claims the presence of adrenalin in nerves, and in 1913 Macallum and J. B. Collop, apparently without knowledge of the previous work, referred to a new substance in nerve cells, particularly in sympathetic nerve cells which they deem allied to adrenalin. Also, as is well known, digitalis, strophanthus and the other agents of the same class are supposed to owe their beneficial influence to a direct action upon the heart, but it has been for some time urged, especially by Sajous, that these agents were adrenalin stimulants and that their beneficial effects were due to this fact. Were it otherwise, why should division of the spinal cord arrest the action of digitalis or the severing of the splanchnic nerve which is known to contain the secretory nerves to the adrenals, inhibit the action of strophantus and digitalis. It is not alone the adrenal product which is active in the work of metabolism, but for a long time the evidence has been submitted to support the opinion that the adrenalin does so in conjunction with the thyroid. Abderhalden says, "Everything points to the fact that the tissue cell has agents at its disposal which render it capable of splitting up into the simplest units all of the complicated substances which are brought to it or which they themselves build up." Cannon has also shown by his experimental work that besides the routine function of the adrenals, that they have an emergency work which is used at times of great excitement, which is also true of the thyroid, its increased activity increasing the metabolic process and aiding the efficiency of the adrenalin. Cannon further shows that the nerves of the thyroid belong to the sympathetic rather than to the vagus system and that they act as true secretory nerves. The injection of adrenalin

and the stimulation of the adrenal gland produces activity in the thyroid. Cannon believes that the gland is normally protected by high neuron threshold. He fused in six cats the anterior root of the right phrenic nerve with right cervical sympathetic. This increased the pulse-rate, the basal metabolism 100 per cent., caused diarrhoea and made it irritable. In two that died of the disease the cortex of the adrenal was greatly enlarged. The disease can be made to disappear by removing the lobe of the thyroid on the same side as that operated upon. It has been reported by White and Johnson in the Lancet that soldiers from the front often suffer from the so-called irritable heart. These individuals are always found to have been subjected to great strain. History of three cases showed the symptoms to be palpitation, slightly elevated temperature, enlarged thyroid gland, rapid pulse, breathlessness, tremor, sleeplessness, irritability and loss of weight. The authors believe that the irritable heart now so common in Europe is a sort of pre-Graves disease.

I want to consider one more condition and its relation to a possible disturbance of one or more of the glands of internal secretion. This is epilepsy. I regret to say that I have as yet been unable to study carefully a case of epilepsy treated systemically with any of the glandular preparations.

Joughin in a recent paper calls attention to the fact that uniglandular symptomatology does not exist in this disease, but that a pluriglandular symptomatology dominated perhaps by the preponderating disorganization of one or more glands always exists and that this knowledge is a great step in the right direction. He cites in detail a case of a young girl, sixteen years of age, presenting an epileptic syndrome which commenced at the first menstrual period. He gave eight to ten grains of pituitary extract daily and marked improvement began within two weeks. The treatment has been followed for a long time and all major convulsive seizures have ceased and she has remained free from all manifestations of epilepsy for two years after the administration of the first dose of pituitary extract. In a report from the New Jersey State Hospital, they call attention to the fact that at least one type of epilepsy is probably due to disease process dependent upon absorption of the poisonous materials from the intestinal canal. This stasis may be produced by an overaction of the adrenal glands. Hyperactivity of the adrenals may be caused by a disordered function of the pituitary, of the pancreas or irritation of the duodenum or severe emotional disturbances. They advise treatment by administration of pancreatin, the dosage recommended being one-half grain given by mouth three times a day. The administration of pancreatin, they report, has had a decided effect in stopping convulsions. The explanation given for the treatment in these cases is that pancreatin therapy serves in some slight measure to inhibit adrenal activity. It also aids in digestion, facilitating the emptying of the duodenum and allowing the proteins to be more rapidly broken down into less toxic end substances.

Spears recently reported a case of epilepsy of twenty-three years' duration apparently cured following the administration of anterior pituitary substance. He received two gr. three times a day, which was later increased to five gr. At the end of four months all attacks had ceased and at the end of eight months' time the man was still without a return of epileptic seizures and had applied for reinstatement in the navy from which he had been discharged ten years before on account of his affliction.

I do not want to imply by what I have said or in the cases that I shall report, that I believe that we have the ultimate solution of many of our most difficult problems in internal medicine in organo-therapy, but I do believe, even more firmly than I did a year ago, that in the study of the activities of the glands of internal secretion, a knowledge of their innervation, a clearer understanding of their interactivities and with a checking up of the clinical results of hypo-and hyper-function we will have very much clearer idea of many diseases which have heretofore in a large measure baffled our efforts of treatment. For most of us it is not possible to conduct elaborate experimental work on account of lack of materials as well as time, but we can all of us add something to the knowledge of this problem by careful clinical studies and a tabulating of the facts which are referable to disordered functions of the endocrine glands.

Sajous has called attention for a long time to the powerfully stimulating action of mercury

upon the thyroid and adrenals and its reasonable property of stimulating actively through them the so-called defensive function of the body, mercury thus becoming what might be termed a thyroid-adrenal stimulant, and he has also drawn our attention to the fact that in small doses it has a helpful influence on these glands. He recounts his own experiences on a Mediterranean transatlantic liner a number of years ago when, during an epidemic of diphtheria the antitoxin on board seemed to have lost its efficiency, owing probably to the deficient reactionary power on the part of the obviously debilitated immigrant children. Daily two or three children died from the disease in spite of repeated doses of antitoxin. The ship surgeon sought Dr. Sajous' aid and, at his suggestion, calomel was given in addition to the injection of antitoxin. Promptly the children got well. He states that millions of such experiences are available in the practice of our professional fathers who used calomel indiscriminately, so indiscriminately in fact that on the plea that small doses did so much good, large doses should do more good, they steadily increased the dose, salivated and debilitated and finally killed the goose that laid the golden egg.

CASE 1. (F. S.) Female. 36 S. Family history negative.

Personal History: Measles, chicken-pox. Always nervous. Two previous sicknesses, one when she was 24, when she was depressed; another at 30, when she was excited. First attack lasted two months and the second six weeks. Two weeks ago had acute tonsilitis, which seemed to precipitate present illness.

Present Illness: Admitted to Butler Hospital, September 13, 1914, in state of acute excitement. Pulse 120. Temperature 100. Tremor of hands, slight exophthalmos. No enlargement of thyroid. In three days temperature was normal, but pulse 130 and tremor of hands had increased, eyes seemed more prominent. Was still in state of manic excitement. Treatment consisted of rest in bed and neutral bromide of quinine gr. 3, t. i. d.

October 30, pulse continues to range between 110-140, tremor of hands is marked, there is slight enlargement of thyroid and moderate exophthalmos. Patient continues active. Hgb. 70 per cent. Reds 4,200,000.

January 25, 1915, pulse ranges between 100-140, has lost ten pounds, although in bed all the time. Continues mentally over-active.

March 28, pulse 100-130. Tremor of hands a little less. Has begun to gain weight and sleep better. Still flighty, restless and irritable.

April 26, pulse has gradually subsided to 90; less tremor of hands. No enlargement of thyroid. Slight exophthalmos. Patient is allowed to walk about. No mental or physical over-activity.

May 13, pulse 80-90; very slight tremor of hands. Can now walk a mile without undue fatigue. Hgb. 80 per cent. Reds 4,500,000. Shows no mental symptoms. Neutral bromide of quinine has been discontinued. Goes home today.

July 15. Patient's brother reports that she has remained well.

This is evidently a case of thyroid intoxication with marked mental symptoms.

CASE 2. (S. H.) Female, 31 S.

Family History: Negative.

Personal History: Scarlet fever at fourteen. Dysmenorrhoea and pain in side for eighteen months. Three months ago uterus and ovaries removed on account of fibroid and cystic degeneration. Normal convalescence for two weeks. then became over-active and irritable, began to laugh and talk constantly.

Admitted to Butler Hospital January 17, 1917. At that time in a state of manic activity. Pulse 110, tremor of tongue and hands, exophthalmos and enlargement of thyroid. Under rest in bed and ovarian substance, gr. V., 2 i. d. the mental and physical over-activity subsided in three weeks, tremor and exophthalmos lessened and pulse came down to 100.

On March 20, mental condition was practically normal, tremor had gone, pulse was 90 and there was only slight exophthalmos. Patient was up and about, but ovarian substance was continued.

March 31, was discharged recovered. She still has slight exophthalmos, but all other symptoms have disappeared.

April 10, patient reported at the hospital and seems quite well. Ovarian substance gr. V. once a day is to be continued.

This is apparently a case of hyper-thyroidism following cessation of ovarian secretion.

CASE 3. (A. S.) 34. Married.

Family History: Negative.

Personal History: Always well; never had

doctor until her children were born. Has four children, oldest fourteen years, youngest four years.

Present Illness: Six months ago began to fatigue easily, felt weak and depressed. Grew worse until least exertion tired her out. Admitted to Butler Hospital March 2. Was poorly nourished, anaemic. Hgb. 70 per cent. Reds 3,600,000. Systolic blood pressure 90, diastolic 45. There was no heart murmur. Was depressed, fatigued on least exertion. Could not concentrate. Wept often. Patient showed the "ligne blanche surrenale" of Sergent. This patient left the hospital against advice in five days, so that the effect of treatment could not be studied.

This patient had been having rest in bed, good food and iron at home without improving. The blood picture was not that of pernicious anaemia, but rather of a simple anaemia. The low blood pressure, the accompanying anaemia and the white line make a rather suggestive picture of an adrenal insufficiency, and I regret that I could not follow the case.

Case 4. (S. A. B.) Female, 24. Single.

Family History: Father living and well. Mother committed suicide. A first cousin insane. Paternal uncle "peculiar."

Personal History: Patient has always been rather frail and sensitive. Had scarlet fever, diphtheria and typhoid fever. Ten years ago had period when she was depressed, had many fears and indecisions. She recovered from this in about a year.

Present Illness: Has been losing weight for several months and feels very weak. Has attacks of diarrhoea. Is depressed and fears she will commit suicide. Admitted to Butler Hospital December 10, 1915. Poorly nourished. Weight 96 pounds. Anaemic. Hgb. 80 per cent. Reds 4,300,000. Leucocytes 8,000. Differential, normal. Blood pressure, systolic 100. Diastolic 55. Heart normal. Enlarged tonsils. Was given iron, and supra-renal tablets gr. V. 2. i. d. Patient improved gradually. Had tonsils removed in April, 1916.

May 25, weight 104 pounds. Hgb. 85 per cent. Reds 4,500,000. Systolic blood pressure 110, diastolic 60. Less depression and fatigues less easily.

August 20, left hospital. Hgb. 85 per cent. Reds 4,500,000. Systolic blood pressure 126, diastolic 76. Weight 112 pounds. Can walk two miles without fatigue. Has only occasional depression.

April 20, 1917, patient seen to-day and considers herself well. Weight 114 pounds. Systolic blood pressure 124, diastolic 74. Took iron up to three months ago and took supra-renal tablets until two months ago.

I felt that this was a case of adrenal insufficiency with a slight anaemia. The patient is better now than she has been for years, but I fear the symptoms may recur.

Case 5. (I. G.) Female, 37. M.

Family History: Father has general arteriosclerosis and a systolic blood pressure of 220. Mother is insane.

Personal History: Twenty years ago patient was treated by Dr. W. W. Keen of Philadelphia for a severe anaemia and was told by him that she would have to take iron at intervals for years. She took iron for a good many years, but during last two years it has seemed to do no good. Has one child fifteen years old.

Present Illness: For past four months has complained of great weakness on exertion and depression. Attempted suicide twice. Came into Butler Hospital November, 1915. Weight 120 pounds. Hgb. 50 per cent. Reds 1,600,000. Systolic blood pressure 90, diastolic 40. Heart normal. Had frequent vomiting and diarrhoea. Was much depressed. In three weeks under daily injections of iron, arsenic and strychnia and supra-renal tablets, gr. V. t. i. d., the Hgb. was 60 per cent., reds 3,000,000 and systolic blood pressure 100.

February 15, 1916, Hgb. 60 per cent. Reds 2,100,000. Systolic blood pressure 110, diastolic 56. Weight 124. Felt so much better that she was allowed to leave the hospital, but continued to take iron and supra-renal substance.

December, 1916, was readmitted. Had done well until one month ago, when after working very hard she began to run down, fatigued easily and was depressed. Weight 124 pounds. Hgb. 70 per cent. Reds 4,000,000 Systolic blood pressure 110, diastolic 56. Shows "ligne blanche surrenale."

January 30, 1917, shows marked improvement, depression has all gone and she has gained strength. Hgb. 70 per cent. Reds 4,000,000.

Systolic blood pressure 120. Iron has been omitted, also supra-renal substance. Now receives thyroid gr. ii t. i. d.

February 24 patient feels quite well. Does not fatigue easily and is not depressed. Weighs 134 pounds. Hgb. 80 per cent. Reds 4,200,000. Systolic blood pressure 126, diastolic 74. Discharged from hospital.

April 20, patient seen to-day. Has been working hard, but feels well. Weight 136 pounds. Hgb. 80 per cent. Reds 4,300,000. Systolic blood pressure 126, diastolic 74. White line cannot be demonstrated to-day. Is taking thyroid gr. ii once a day. No other medication.

This seems to be a case of anaemia that has shown frequent exacerbations of a good deal of severity, associated with adrenal insufficiency. Which condition is primary and which secondary I do not know any way of telling.

I feel that all these cases reported are concerned with disorders of the ductless glands and as such are interesting problems for further study.

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## PERFORATION OF THE DUODENUM DUE TO A RETROPERITONEAL FIBRO-SARCOMA.*

By C. S. CHRISTIE, M. D.,
Riverpoint, R. I.,
and H. S. BERNSTEIN, M. D.,
Providence, R. I.

Perforation of the duodenum due to causes from within is sufficiently well recognized and occasionally encountered; whereas perforation due to causes from without is of rare occurrence and of obscure symptomatology. The unusual features of our case warrant its addition to the meagre literature of retroperitoneal tumors.

The patient was a negro, thirty-seven years of age and a painter by occupation. His family history is unimportant. The past history is negative save for two or three mild attacks of tonsillitis. He does not recall ever having had any severe illness. During the past three years, however, slight attacks of indigestion have troubled him at intervals of several weeks. The discomfort of these attacks has been relieved by home remedies. Occasionally the excessive use of alcohol has incapacitated him for a day or two. Venereal is denied.

The patient first sought medical aid on the evening of January 22, after an alcoholic debauch on the day preceding; he complained of back-ache in the lumbar region, of chilly sensations, and of general malaise. Pulmonary, abdominal and urinary symptoms were absent. Temperature 103, pulse 108, respiration 18. On January 24, the patient had several watery evacuations and a profuse nose bleed. The temperature continued elevated for two days and became normal on January 25. He then insisted on returning to work. He again summoned medical assistance six days later on the morning of January 31. Soon after arising that morning he had a severe chill. He was seen in bed complaining of chilly sensations and "distressness" in the epigastrium. Temperature 104, pulse 120, respiration 20. The abdomen was moderately distended. No tenderness was elicited on palpation. Muscular rigidity was absent. There had been no nausea or vomiting at any time, but he had passed several profuse stools which presented the appearance of "raspberry jam." The stools increased in number. Abdominal distention was more marked. The pulse became more and more imperceptible. The patient became comatose. Death ensued on the afternoon of February 1. Thus ten days after the onset of symptoms which suggested an attack of grippe, so prevalent at this time, the end came unexpectedly. The prominent signs and symptoms of the patient may be summarized as follows:—elevated temperature, chilly sensations, backache, feeling of distress in the epigastrium, abdominal distention, and profuse stools of reddish brown color.

The autopsy was performed twenty-four hours post-mortem, the body having previously received arterial and cavity injection of preserving fluid. The body was that of a well developed and well nourished negro. The muscular development was noteworthy. Oedema was absent. The superficial glands showed no enlargement. The organs of the neck, of the thorax and of the abdomen were not remarkable, save as to be noted.

The stomach was contracted; the mucosa was normal; the upper portion of the great omentum

*Read at the Annual Meeting of the Rhode Island Medical Society, May 31, 1917.

seemed to protrude forward causing a slight upward displacement of the transverse colon. Similarly the duodenum was displaced forward and upward. Present in the posterior wall of the transverse portion of the duodenum was a perforating ulcer, circular in outline, measuring 1.8 cm. in diameter. A probe was readily admitted through the ulcer into a large tumor mass, to which the duodenum was firmly adherent. The absence of the valvulae conniventes in the adherent gut was marked. The tumor mass was pear-shaped, measuring 17x15x6 cms. The color was white. It presented a concavity on the posterior surface where it came into relation with the vertebral column. The anterior surface was convex and the superjacent duodenum divided the tumor into two unequal portions, the inferior being the larger. The tumor was sharply circumscribed and presented a nodular appearance. Numerous inflammatory adhesions extended between the mass and adjacent structures. The broad base of attachment, however, seemed to be in the retroperitoneal space, rendering the mass immovable. There was no apparent compression of the abdominal aorta and of the inferior vena cava.

On palpation, the outer wall of the tumor was moderately firm but fluctuation was present throughout. On cross-section, the wall varied from 1 cm. to 4.5 cms. in width. Cut surface was smooth and white. The remaining central portion was composed of a large amount of reddish-brown, friable material of soft consistence, suggesting blood-clot.

Microscopic sections of the tumor reveal a structure of cells and intercellular deposit in almost equal proportion. The cells tend to be spindle-shaped. The nuclei vary in form from oval to round, the former predominating. An occasional cell in direct division is seen. Sections stained by phosphotungstic acid haematoxylin show the presence of many coarse collagen fibrils between the cells. With the latter the more delicate fibroglia are intimately associated. The cells and fibrils form small bundles running in various directions. Numerous thrombi are present in the larger vessels which account for the central degeneration and hemorrhage. It is noteworthy that the lymph glands of the body cavity were neither visible nor palpable, and that there was no evidence of metastases. The duodenum was affected indirectly. Due to the immobility of the retroperitoneal portion of the duodenum, great pressure was exerted upon its posterior wall with consequent pressure atrophy and resulting necrosis of a circumscribed area.

Steele, in a review of the literature of retroperitoneal sarcoma, reports that "The tumor infiltrated and perforated the rectum in two cases, the bladder and stomach in one each. In three, death was caused by rupture of a degeneration cyst into the peritoneal cavity."

The complete anatomical findings of our case were as follows:—

Perforation of the duodenum, resulting from pressure of a retroperitoneal fibro-sarcoma; acute dilatation of heart; acute congestion of lungs and kidneys; and moderate arteriosclerosis.

In view of these findings, an interpretation of the clinical history may be ventured. It is conceivable that the attacks of indigestion may have been the first expression of disturbance of the upper part of the intestinal tract. These attacks were of three years' duration. The size and histological features of the tumor suggest chronicity. The present illness was ushered in with temperature, chilly sensations, and backache. The fresh hemorrhage found in the centre of the tumor mass, indicates that the process has been acute in character. Finally the chill, the distress in the epigastrium and abdominal distention, which preceded death, are strongly suggestive of the perforation.

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## REPORT OF A CASE OF MALIGNANT PUSTULE.*

By Lopo de Mello, M. D.,
Providence, R. I.

One of the most interesting points in the study of anthrax is its prominent place in the history of medicine.

Its origin is lost in antiquity. We find allusions to it in Homer; it is mentioned in Virgil; Hippocrates described carbuncles which can be diagnosed as anthrax.

Its etiology was only identified in 1850. A

*Read before the Rhode Island Hospital Club, June 27, 1917

FIG. I. Gross photograph showing tumor mass and the perforation of the duodenum. Above the tumor lie the upturned pancreas and stomach.

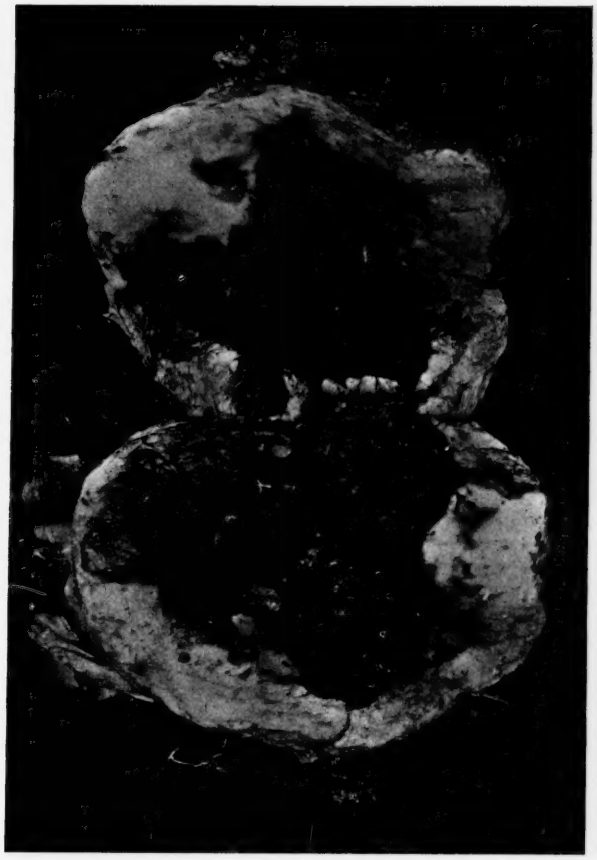

FIG. II. Section of tumor mass showing the degenerated center.

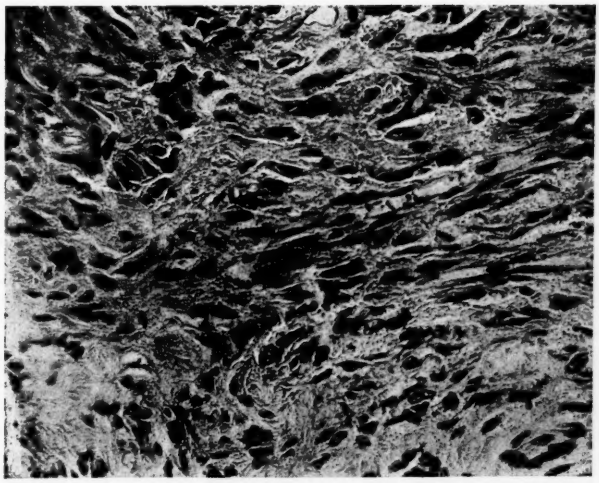

FIG. III. Microphotograph of portion of tumor.

Frenchman, Casimir Davaine, in 1850, made the first study of the bacillus causing anthrax. In 1896 Koch published his work on the cultivation of the bacillus and proved its relation to the disease, thus forming the beginning of modern bacteriology.

Pasteur later confirmed Koch's discovery and Davaine's assertions, and by growing the organisms through many generations and producing anthrax from the term of the series brought out the epochal discovery that by passing the causative agent through the bodies of animals the virus could be attenuated or heightened by successive passage through series of animals. His work was later augmented by his production of a vaccine which reduced the mortality from 10 per cent. to 1 per cent. in sheep, and from 5 per cent to 0.34 per cent. in horned cattle.

Anthrax is found in all parts of the world, specially in France, Germany, Austria, Italy, Turkey, Russia, China, India and South America. In this country the disease passed for many years unrecognized, and even to-day it is disgracefully neglected. It is brought here by hides and hair imported from countries where the disease is prevalent among animals. It occupies an important position as an occupational disease, and only recently are precautionary measures beginning to be enforced.

The disease here is on the increase, a fact very little known, and more prevalent in the tanning centers and among people in industries where animal hair is used.

Bacillus anthracis, because of the work of Koch and Pasteur, has become the most studied bacterium. Bacillus anthracis is a long, rod-shaped organism with concave ends, 4.5 to 10 microns in length and 1 to 1.25 microns in breadth, the largest pathogenic organism known. It occurs single or in chains, and in cultures it grows in long chains, end to end, giving the characteristic bamboo-rod appearance. It grows well in all ordinary culture media, and on gelatin and agar plates the colonies grow out in long filaments, making it very characteristic. It stains well by the ordinary anilin dyes and is gram positive by the gram staining method. It forms spores, making it very resistant to sterilization, and has often been used in testing the efficiency of germicides. The spore is single and is situated in the center of the cell.

Anthrax is a disease, primarily of animal, and only secondarily of man. It is found in horses, cattle, sheep and other cloven-hoofed animals, and experimentally it may be transmitted to other animals, such as rabbits, guinea-pigs and mice. In the natural infection the mode of entrance is through the alimentary canal by swallowing spores deposited on the grass while grazing, but may occasionally become infected through abrasions on the skin, and it may be carried by flies from animal to animal.

In man the disease is acquired by handling infected hides or hairs, by inhaling the spores, or by eating or handling infected meat. According to the mode of infection is the resultant type of infection in man.

We have therefore two main types: (a) External anthrax, (1) malignant pustule, (2) malignant anthrax edema; (b) Internal anthrax, (1) intestinal, (2) pulmonary, (3) splenic.

This paper deals with a report of a case of malignant pustule. This is the most frequent form of anthrax in man because of the method of infection. It occurs most often in individuals handling animal hair or hides, but may occur among veterinarians or stable hands. It is first manifested by some itching after a few hours following the exposure, usually on the hands, arms or exposed parts; this is soon followed by the formation of a small papule which becomes vesicular.

There is considerable inflammatory reaction about this, and within some hours the primary vesicle becomes darker in color with central gangrene and smaller vesicles are formed around it. Considerable edema appears, and extends for considerable distance. The fact that there is less pain than with an ordinary furuncle often encourages delay for interference, often causing disastrous results.

As a rule there is extensive involvement of the lymphatic and neighboring glands which may look alarming, but are not necessarily fatal signs. Marked constitutional symptoms, erysipelatous blush, rapid gangrene of the pustule, hemorrhagic vesicles in the periphery are signs that demand a guarded prognosis. Two-thirds of the skin infections recover if proper interference is offered to retard the progress of the disease, but there are some foudroyant cases where sepsis appears early, and death may follow two days

after the appearance of the pustule, but the usual course in the fatal cases is about 10 days, ending in symptoms of sepsis, fever, delirium, diarrhea, vomiting, hematemesis, foul tongue, prostration, wasting, enlarged spleen, and in many cases with myorcardial collapse.

In the cases with a favorable prognosis, the constitutional symptoms are slighter, the necrotic area about the pustule sloughs off and the wound heals.

The diagnosis must be made in conjunction with the laboratory findings. The occupational pursuit of the patient must be considered, the origin of the hides or hair, the characteristic onset without much pain and its rapid course with vesicular formation.

For a definite and conclusive diagnosis, laboratory aid must be obtained. If sufficient fluid is present in the vesicle it can be aspirated with a syringe and injected into a guinea-pig. Then the pustule may be incised with a scalpel, and smears and cultures made from its contents. If positive the direct smears will show the characteristic gram positive organisms, which can be further confirmed by guinea-pig inoculation and culture characteristics.

Report of Case. On July 29, 1916, Mr. A. H. came to the accident room, referred by his physician. Dr. Hanchett brought patient to laboratory with tentative diagnosis of malignant pustule and for assistance in confirming the diagnosis. Patient did not feel very sick and presented the following condition: A few days ago a small pimple-like vesicle appeared on the flexor surface of the forearm, increasing rapidly in size and multiplying in number. Went to own physician, who incised it for drainage. As the condition rapidly grew worse was referred to hospital. At the time I saw him the whole left arm was markedly swollen and oedematous. The pustule which had been opened measured about 1 cm. in diameter, of a dark red color, with irregular edges and a dark base. Many small vesicles about this area were present. Smears were made from this incised pustule and showed a few long gram positive rods, when single, with rounded ends; when in short chains, with concave ends. Cultures were also made on blood serum, agar and gelatin slants, bouillon tubes and gelatin plates. On all media the characteristic growth of bacillus anthracis was obtained, and smears from these showed the same organisms as described from the smears obtained from the incised pustule. Hanging drop from the bouillin culture showed the bacilli to be nonmotile. An emulsion in saline was made from one of the agar slants and one-half c.c. of this injected subcutaneously into a guinea-pig. Next morning the pig was found dead and autopsy revealed bacillus anthracis from peritoneal cavity, heart's blood and subcutaneous tissue near the site of injection, liver and spleen. These organisms were confirmed by cultures to be bacillus anthracis.

Koch's four laws having been fulfilled, a diagnosis of anthrax was made.

The hospital record gives us the following history:

A. H.—Birthplace, England; occupation, picker maker; aged, 44 years; married; white; complaint, sore left arm.

F. H. Negative.

P. H. Malaria 18 years ago; otherwise negative. Occupation, works in factory where hair and hides are handled.

P. I. Began three days ago before entrance. Small red pimple on upper third of forearm, which itched a good deal. Next immediate region about two inches in circumference was swollen. Treated by local physician, who opened it. Swelling became worse quite rapidly, extending from finger tips to shoulder. Entered the hospital that day, and had chills before entrance.

P. E. Maculo-papular rash over back and a hypertrichosis. Head, heart, lungs and abdomen negative.

Local. Left arm quite swollen from finger tips to axilla, discolored throughout and red, including the axilla. Black hole in upper third of forearm on flexor surface, with no discharge, but several blisters around it.

July 31, 1916. Temperature 103. Arm swollen and reddened. Several bullae filled with a thin yellowish serum. Surpho-napthal dressing.

August 3, 1916. Temperature dropped to normal. Wet aluminum acetate dressing to arm. Swelling and redness subsiding.

August 6, 1916. Patient comfortable. Swelling still subsiding. Aluminum acetate dressings continued. Allowed up in chair.

August 9, 1916. Arm much better. No temperature.

August 15, 1916. Ulcer large and covered with superficial slough. Small superficial abscesses over left buttocks. Cultures from these showed a staphylococcus aureus infection.

August 18, 1916. Went home, to return in about ten days for skin graft.

On day of admission patient had a temperature of 101.4, running up to 103.6 on the second day and 103 on the third day, and gradually returning to normal. Pulse on admission was 120 and 128 on first and second day, respectively, gradually returning to normal. Respirations about 36, running the same course as temperature and pulse. Urine showed a faint trace of albumin and rare granular casts. On July 31 a blood culture was taken, which revealed no growth. It is of interest to note that a positive blood culture is only obtained just before the exitus lethalis.

In order to determine whether the patient had developed an active acquired immunity the following procedure was undertaken:

On August 23, twenty-six days after the beginning of the manifestation of the infection, about twenty c.c. of blood was obtained from the median basilic vein and immediately centrifuged to obtain the serum.

A series of four guinea-pigs were injected subcutaneously in the groin, making an attempt to strike one of the larger veins in the region with the following proportion of patient's serum: Guinea-pig (1), 1 c.c. serum; guinea-pig (3), 1 c.c. serum; guinea-pig (4), 2 c.c. serum; guinea-pig (5), 1 c.c. serum.

The following morning the same animals were treated as follows: Pig (1) injected with 1 c.c. of serum was used as control. Pig (2) injected subcutaneously with .1 c.c. of a saline emulsion from a young agar culture of bacillus anthracis previously obtained from patient. Pig (3) (1 c.c. patient's serum) injected with .1 c.c. of the same emulsion. Pig (4) (2 c.c. patient's serum) injected with .1 c.c. of the same emulsion. Pig (5) (1 c.c. patient's serum) injected with .02 c.c. of the same emulsion.

The following results were obtained:

August 25, 1916. Pig 1 (1 c.c. serum) appears normal. Pig 2 (.1 c.c. emulsion) appears sick. Only moves when disturbed. Refuses to eat. Pigs 3, 4 and 5 appear somewhat quiet, but move about the cage of their own free will. Eat some. They present an altogether different picture from Pig 2—the control.

August 26, 1916. Pig 2 (the control) found dead. Autopsy revealed a bacillus anthracis septicaemia confirmed by smears and cultures. Pigs 3, 4 and 5 present the same picture as on the previous day.

August 27, 1916. Pig 3 (1 c.c. serum and .1 c.c. emulsion) appears quieter, but can be aroused. Pigs 4 and 5 are apparently normal.

August 28, 1916. Pig 3 presents the same picture as on the previous day. Pig 4 to-day for the first time appears quieter. Pig 5 apparently normal.

August 29, 1916. Pigs 3 and 4 found dead. Autopsy revealed bacillus anthracis septicaemia confirmed by smears and cultures. Pig 5 appears somewhat quieter.

August 30, 1916. Pig 5 found dead. Autopsy revealed bacillus anthracis septicaemia. Pig 1 continued to appear normal for months.

Although the experiment may not have been properly regulated to develop a full passive immunity in the animals, it is evident that the patient must have acquired an immunity since his serum partially developed a passive immunity in the laboratory animals.

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## SKIN GRAFTING

By ARTHUR M. SHIPLEY, M.D.

*(International Clinics, June, 1917)*

Shipley describes the excellent results he has obtained in the treatment of chronic leg ulcers by the use of skin grafts, as described by John Staige Davis in the Jour. A.M.A., Sept. 19, 1914. He recommends this method for the following:—First, the ease and the simplicity of the procedure; Second, its uniform success if the proper precautions are taken in the preparation of the surfaces and the application of the grafts; Third, the robust surface that is formed by the graft; Fourth, the fact that the operation can be done without a general anaesthetic; Fifth, the very rapid and remarkable filling up of the base of the ulcer to the level of the surrounding tissues.

# THE RHODE ISLAND MEDICAL JOURNAL

Owned and Published by the Rhode Island Medical Society

Issued Monthly under the direction of the Publication Committee

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Editorial Correspondence, Books for Review and Exchanges should be addressed to the Editor; Advertising Correspondence to the Business Manager.

Advertising matter must be received by the 15th of the month preceding date of issue.

Advertising rates furnished upon application, to the business manager, J. F. Hawkins, M.D., 114 Westminster Street, Providence, R. I.

SUBSCRIPTION PRICE, $2.00 PER ANNUM. SINGLE COPIES, 25 CENTS.

Entered at Providence, R. I. Post Office as Second-class Matter.


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## EDITORIALS

### THE PHYSICIAN'S PRESENT DUTY.

As we are entering soberly into the great task of making the world safe for democracy, we must realize that proper sanitation and hygiene stand in the front rank of military activities. The proper examination of recruits, the hygiene of camps and the care of the wounded cannot be properly undertaken until medical men offer their services to the Government more freely than they have done up to the present. The Medical Departments of the Government are handicapped because the Surgeon Generals have not been given full authority and means to meet these increased responsibilities. It is to be regretted that neither the President nor Congress have seen fit to provide the authority and means, but this does not excuse the medical profession for not furnishing the men.

Colonel Theodore Roosevelt, addressing the American Medical Association in New York in June, referred to the present shortage of physicians in the service, and very pointedly remarked that if the soldiers should die like rats from lack of medical attention, the responsibil-

ity would rest with the medical profession of this country.

The Medical Corps of the Army and Navy, the Medical Reserve Corps and the new Officers' Reserve Corps are the branches of the service most in need of additions. Younger physicians are in greater demand and will be chosen first. Older physicians by their influence and help can make it easier for the younger men to volunteer. The Government intends to work no unnecessary hardship on any physician. To this end the State Committee of Preparedness, consisting of Drs. John W. Keefe, Chairman; Arthur T. Jones, Secretary; Frank L. Day, Jay Perkins, John Champlin, James W. Leech, Frederick V. Hussey, Roland Hammond and Charles W. Stewart, have catalogued and appraised the medical talent of Rhode Island and the information is now on file at the disposal of the Surgeon Generals.

We should urge upon the President and Congress that full authority and ample means be given the Medical Department to meet present responsibilities. We should also throw ourselves heart and soul into the task of securing a full enlistment of the medical profession in what promises to be our most important national business for some time to come.

## SEPTEMBER MEETING OF THE STATE SOCIETY.

The next meeting of the State Society, to be held at the Rhode Island Hospital, will be an opportune time to repeat the clinical session which was held there a few years ago. With its abundant clinical material it would not be difficult for its staff to arrange a series of operations at a convenient hour prior to the regular session and an opportunity thus afforded to many members of the Society to become better acquainted with the work of this institution.

The clinical meetings at St. Joseph's Hospital proved of great interest to the profession and its example may well be imitated by the Rhode Island Hospital. The new out-patient building will probably be completed and it is to be hoped that an opportunity will be afforded to examine this new and much needed addition to the resources of the hospital without encroaching on the time set for the regular session.

If devotees of sport desire, the usual ball game may be supplemented this year by the finals in a tennis tournament or a match between the internes and a graduate pair who think they retain some skill at the game in spite of their years of indolence in private practice.

## WAR RECORD OF RHODE ISLAND PHYSICIANS.

At the next meeting of the State Society provision should be made for a committee, or a member should be appointed, to gather data for a subsequent history of the part played in the war by members of the Society. Such a task begun at the expiration of hostilities would be necessarily inaccurate and difficult of completion; begun now, when the necessary information is easily acquired, it is comparatively simple. The transactions of the Society should honor its members who serve their country by an authoritative record of their deeds.

## AN INDICTMENT OF THE RAW EGG.

The iconoclasts are abroad and have set about demolishing the ancient prestige of the raw egg. Some of us have for long held heretical views on the subject, but lacking the proper evidence to sustain them, we have remained discretely silent, fearing in our too great modesty to cast even a suspicion upon so august an institution. But we shall dissimulate no longer, for now we have trustworthy support for our opinion that the raw egg is a mere pretender: yet not the yolk of it, but only the white. The tradition that raw egg-white is especially digestible began probably with the teaching of Beaumont based upon his experiments with Alexis St. Martin. "Albumin," says Beaumont, "if taken into the stomach either very slightly or not at all coagulated is perhaps as readily chymified as any article of diet we possess. If coagulated it experiences a very protracted digestion. In the first case the albumin becomes finely coagulated and divided in the stomach." It was this observation of Beaumont's which led subsequent writers upon dietetics to praise very highly the use of raw egg-white, especially in disease. But as has happened so often in medicine, while Beaumont's account of the fact was correct, his inference was wrong. According to W. G. Bateman in the current

number of the American Journal of the Medical Sciences, raw egg-white is demonstrably suspect as an article of diet for the sick. It occupies a quite unique position among the native protein foodstuffs. In the first place, it does indeed leave the stomach quickly, not because it is digested easily, but because it is not. As Pawlow observed years ago, it has only a feeble power of stimulating the flow of gastric juice, while cooked egg-white calls forth an abundance of juice and unites easily with the hydrochloric acid. Moreover, raw egg-white offers considerabe resistance to the action of pepsine and also to the tryptic ferment. Bayliss found that in the intestine it requires seventy hours for the digestion of the raw material to equal that of the cooked, all other things being equal. Nor is this all; for raw egg-white was found by experiment to be poorly utilized in the body, from thirty to fifty per cent. being wasted in the feces. Not content with laboratory experiment, Bateman proceeded to clinical trial. In children and adults he found that raw egg-white given in large enough quantities and for a sufficient time produced diarrhea, flatulence and other discomforts, while its percentage of utilization was less than eighty-five. In view of these faults and others we have not mentioned he asks whether such a substance has much to commend it as a foodstuff of preference for the sound person, let alone for the invalid. And when the native protein needs only to be coagulated at seventy degrees in order to obviate almost all the effects mentioned, there appears still less reason for using it uncooked. In view of the wide use of raw egg-white, Dr. Bateman's conclusions come to us as an interesting clinical challenge.

## THE MEDICAL "SLACKER."

The insistent call for more physicians for the Medical Officers' Reserve Corps of the Army and the knowledge of the dire need for medical men in the armies of the Allies makes it imperative for every able-bodied doctor speedily to decide where his duty lies while yet the opportunity of honorably volunteering is open to him. Up to date the failure of the volunteer system has been nowhere so evident as in the recruiting of medical officers. That the draft must be used to raise the necessary force of army surgeons appears certain.

In consulting his own conscience as to his duty each man who believes himself fit for service has but three things to consider: his family, his community and his practice. The man who allows the question of his own personal welfare to interfere with his duty to his country, who is a slacker because he is a coward, need not be discussed.

The demands of family and dependents must be weighed extremely carefully. If the physician's wife and children will be without support in his absence and will necessarily be subjected to extreme hardship or want, his duty of course is to remain with them. If, on the other hand, they are not really dependent and he knows that in his absence ample funds will be forthcoming for their support, they should not stand in the way of his offering his services to the country. The sacrifice involved in his going will be great for him, greater for them, but no more than should be required.

There are few, very few, physicians whose importance to the community is such that it is proper for them on this account to remain at their posts at home. Such men are, for example, the superintendents of the larger hospitals, health officers of the larger cities and men in certain special lines of work whose absence would of necessity cause a real hardship to their fellow-citizens. It is only one man in a hundred who knows that if he goes there will be no one available to take his place.

The man who refuses to volunteer because his practice will suffer if he does, is an out and out slacker. It is true that, unlike men in business, the doctor, when he leaves his work, finds on his return no work to do. It is true that many who go will to a great extent have to start over again. Nevertheless, the sacrifice is relatively insignificant, and the man who will not make it when the fate of civilization hangs in the balance is a disgrace to his profession, his family and his friends. This type of slacker is very common here in Rhode Island as well as elsewhere. He is hardly less despicable than the coward. It is to be hoped that the keen contempt of the community will force such men to a realization of the gravity of the present critical situation and a resolve to do their duty.

# SOCIETIES

## RHODE ISLAND MEDICAL SOCIETY.

*(Continued from July)*

Dr. George S. Mathews reported for the Committee on Library as follows: "From June 1, 1916, to May 19, 1917, the Library received 270 bound volumes from the following sources:

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| United States Government | 11 |
| Other gifts | 251 |
| By purchase | 8 |
| | 270 |
| Reprints | 143 |
| Pamphlets | 234 |
| Visitors at Library | 1612 |

Donations were received from Rhode Island State Board of Health, Rhode Island Historical Society, Rhode Island State Library, Rhode Island Homeopathic Hospital, Providence Medical Journal, United States Government, American Gastro-Enterological Association, American Laryngological Association, American Laryngological, Rhinological and Otological Society, American Urological Association, Association American Physicians, College of Physicians at Philadelphia, New York Dermatological Society, New York Obstetrical Society, Rhode Island Ophthalmological and Otological Society, Section on Genito-Urinary Diseases, A. M. A.; Society Lying-in Hospital, New York; Bellevue and Allied Hospitals, New York; Episcopal Hospital, Philadelphia; Peter Bent Brigham Hospital, Boston; Massachusetts General Hospital, Boston City Hospital, Alabama Medical Association, Henry Phipps Institute, Philadelphia; University of Michigan, Lane Medical Library, San Francisco; Leland Stanford University, Washington University Medical School, St. Louis; Massachusetts State Department of Health, Department of Health, New York City; Carnegie Endowment for International Peace, General Education Board, New York; Life Extension Institute, Prudential Insurance Company, Parke Davis and Company, Detroit; Dr. R. H. Ferguson, New York; Mrs. W. F. Gleason, Providence; Dr. G. L. Richards, Fall River; Dr. Casey A. Wood, Chicago. Also from the following fellows: C. V. Chapin, H. C. Pitts, J. A. Webb, R. Hammond, E. M. Porter, S. A. Welch, J. W. Leech, F. T. Rogers, R. F. Wilcox, C. F. Peckham, E. A. Stone."

Dr. J. F. Hawkins presented the following report for the Publication Committee: "At the fall meeting last year it was voted by the Rhode Island Medical Society to purchase the right and title of the Providence Medical Journal. It was not possible to put this action into effect until January of this year, when the initial number of THE RHODE ISLAND MEDICAL JOURNAL appeared as a monthly in compliance with the request of the Coöperative Medical Advertising Bureau connected with the American Medical Association.

The balance in January, 1917, to start this new JOURNAL with its extra expense, to printer alone, of issuing 12 copies annually instead of six was the munificent sum of $391.36.

We have now issued and paid for five copies of the JOURNAL; the sixth is on the press and there is a balance of about $300 in the bank. The issues have averaged about $150 for the first three or four and the last one about $25 less by reason of eight less pages per issue. We are sure of about $50 only for each issue that can be relied upon each month. This is from the Cooperative Medical Advertising Bureau and the remainder necessarily comes in very small installments from the local advertisers. In the June issue is about $150. It will leave $200 for the balance after having paid for the same number of issues (six) that we always have had previously. But six issues beginning with July remain to be paid for to make up the year as we now issue, and if we keep to our present $125 rate per issue that means $750 for the remainder of the year. To pay for that we have $200 balance; and $50 for six months, which is $300, added to $200 makes a total of $500. That leaves $250 to be collected from the local advertisers. It will be close scratching to do it. However, we are not discouraged yet. We have a JOURNAL that is in line with the best of the State Journals, and it would be a pity to be obliged to close for lack of funds or patronage. Nearly every State Journal (and we receive them all in exchange now) is aided by its State Society; some to the extent of from $3,000 to $5,000. You know the state of finances of our State Society as well as I do, and know what chance there is of aid from that source.

We have more new and excellent Journals

exchanging with us in our new form than in almost any five years on the old basis. Even some of the weekly and high priced monthlies exchange with us.

The Publication Committee take this opportunity to publicly thank the editorial staff of the JOURNAL for its very efficient gratuitous service, and desire to assure them their effort is appreciated to the fullest extent by this committee if not by the medical fraternity of the Society and State."

Dr. C. V. Chapin reported for the Committee on Medical Education, State and National, as follows: "The Committee on Medical Education beg leave to report that it has held only one meeting during the year. This was for the purpose of considering a communication from the American Medical Association calling attention to the fact that in Rhode Island almost any institution, school or corporation can legally grant the degree of M. D. or any other degree. It would seem to be very desirable to remedy this state of affairs, but it did not seem desirable to attempt such legislation at the last session and before the subject could be carefully studied. Conferences have been held with the State Department of Education and with others, and it is hoped that some legislation may be framed before next winter."

Dr. F. G. Phillips reported for the Committee on Necrology as follows: "During the past year 10 resident members and two non-resident members have died. The resident members are:

Dr. Henry W. Burnett, born 1872, died May 7, 1917.

Dr. Dan O. King, born 1850, died April 8, 1917.

Dr. Albert E. Ham, born 1843, died January 24, 1917.

Dr. Francis M. Harrington, born 1869, died June 6, 1916.

Dr. Adrian Matthews, born 1850, died November 19, 1916.

Dr. John E. O'Neil, born 1865, died December 7, 1916.

Dr. George D. Ramsey, born 1869, died November 27, 1916.

Dr. Russell B. Smith, born 1857, died June 4, 1916.

Dr. Edward F. Walker, born 1846, died December 12, 1916.

Dr. Edward S. Parker, born 1874, died February 18, 1917.

The non-resident members:

Dr. Thomas A. Kenefick, New York City, born 1858, died July 30, 1916.

Dr. Charles H. Earle, Los Angeles, Cal., born 1861, died June 12, 1915.

In accordance with the usual custom, the obituaries of the deceased members will appear in the December issue of THE RHODE ISLAND MEDICAL JOURNAL."

Dr. J. E. Mowry reported that the Committee on Legislation and the Committee on Social Insurance had kept in close touch with legislative action during the past year.

(CONTINUED IN NEXT ISSUE)

## DISTRICT SOCIETIES.

### PAWTUCKET MEDICAL ASSOCIATION.

The regular meeting of the Pawtucket Medical Association was held at the To Kalon Club on May 17, 1917, Dr. C. H. Holt presiding. Paper: "Remarks on Medical School Inspection," by Dr. B. U. Richards, Pawtucket, R. I.

EARL J. MATHEWSON, *Secretary.*

### KENT COUNTY MEDICAL SOCIETY.

Monthly meeting of the Society was held at the Kent County Club rooms, Arctic, May 10, 1917, at 4 p. m. Paper: "Some Disturbances of Heart Action," by Dr. Frank T. Fulton, Providence, R. I.

L. J. A. LEGRIS, *Secretary.*

Monthly meeting of the Society was held at the Kenty County Club rooms, Arctic, June 14, 1917, at 4 p. m. Paper: "The Stiff and Painful Shoulder," by Dr. Roland Hammond, Providence, R. I.

L. J. A. LEGRIS, *Secretary.*

### WASHINGTON COUNTY MEDICAL SOCIETY.

The quarterly meeting of the Washington County Medical Society was held at the Colonial Club, Westerly, July 12, 1917. Addresses were made by Stephen DeM. Gage, S. B., and Dr. Harold G. Palmer on "Chemical Examinations for Physicians as made by the Rhode Island State Board of Health."

Dr. Champlin, as President of the Rhode Island Medical Society, made an official visita-

tion and presented the needs of the State Society.

Luncheon at the club followed adjournment.

W. A. HILLARD, M. D., *Secretary.*

### MEDICAL CLUBS.

MEDICAL REVIEW SOCIETY, JUNE 28, 1917.

*Regional Anaesthesia.*

After a brief discussion of the history of local anaesthesia and a discussion of the action of cocaine and its various substitutes, the paper described the method of nerve blocking as applied to various parts of the body and the operations that may be performed under this type of anaesthesia. Special stress was laid upon the method of paravertebral injections for the production of anaesthesia of the regions supplied by the spinal nerves, and a description of the technique of Dr. E. O. Jones of Washington was presented. Novocaine was advocated as the anaesthetic of choice because its action is less toxic than that of cocaine. The method of producing anaesthesia of the perineum by nerve blocking was also described in detail.

E. S. C.

## HOSPITALS

### RHODE ISLAND HOSPITAL.

The regular quarterly meeting of the Staff Association was held at the hospital on July 9, 1917.

Dr. Frank H. Mathews has been transferred from the surgical out-patient department to the gynecological out-patient department.

Dr. Paul Appleton has been appointed to the surgical out-patient department.

Dr. John O'Meara has been appointed to the nose and throat out-patient department.

Dr. Frank McCabe has been appointed to the eye out-patient department.

The addition to the out-patient department was opened for clinics on Monday morning, July 9, 1917.

### PROVIDENCE CITY HOSPITAL.

Drs. W. W. Street and E. A. Burrows began their services as members of the house staff on July 1.

Four nurses have been sent by the United States Naval Training Station to the hospital for a training in infectious diseases.

Dr. Joslin of the United States Naval Training Station recently spent about a week at the hospital in the study of infectious diseases.

## BOOK REVIEW

CANCER—ITS CAUSE AND TREATMENT. Vol. II. By L. DUNCAN BULKLEY, A. M., M. D., Senior Physician to the New York Skin and Cancer Hospital, etc.

This volume is a series of six lectures and a final chapter which summarizes what has gone before. This last chapter is a reprint of an address which has been delivered by the author on several occasions. Like volume one the book advances and elaborates the idea that the underlying cause of malignancy is "deranged metabolism," due to several factors, the most important of which is the "undue ingestion of animal protein." The author believes that the deviations from a normal simple life which are incident to modern civilization and especially the consumption of large quantities of meat, coffee and alcohol produce in some manner what he refers to as a "vicious state of the blood current" which so alters the metabolism of the tissue cells that some of them acquire the ability to reproduce rapidly and invade, or, in other words, become malignant. Little evidence is presented in support of this view, and the argument, although it bears testimony to the abundant zeal and enthusiasm of the author, is not convincing. The treatment recommended consists principally of a diet which excludes all protein of animal origin, including milk, plus the administration of potassium, iron and a laxative, usually cascara. In most of the cases reported the diagnosis was clinical rather than microscopical, and in each of the two most striking instances of cure in which microscopical examination was carried out by competent pathologists, one exposure to radium was used in addition to the treatment. If the diagnosis of malignancy was correct in all the cases mentioned, the results presented are certainly striking.

A. M. B.

## SURGICAL INSTRUMENTS FOR THE EUROPEAN WAR.

The Committee of the Pawtucket Branch of the British Relief Society on Surgical Instruments reports that the shipment of six hundred surgical instruments of February last has been safely delivered to the Second Southern General Hospital, Southmead, Bristol, Eng.

The matron, who, by the way, has been decorated by the King for distinguished service during the war, writes: "The idea of collecting the surgical instruments was very good and has been responded to splendidly. I have taken more than one hundred for our own use, which we are very glad to have. I am giving a lot to a new hospital being opened at Overton and others to Almondsbury, where they were very short. Some are going to an English lady doctor who has been working in Russia and is returning shortly. The needs of Russia are tremendous. The women's surgical instruments have been given to the War Victims Relief Committee of the Society of Friends who are carrying on their maternity hospital in Marne and who are also undertaking a great amount of medical relief work in the extreme southern part of Russia." Another shipment of instruments is on the way to Marseilles, where they are greatly needed all up and down behind that terrible line of fighting men. Centigrade thermometers were asked for and three dozen were secured by gift and purchase and were sent.

A few more instruments undergoing repairs remain to be sent, and should more be contributed they can be sent at any time. The instruments contributed numbered about fourteen hundred. They consisted of seven or eight hundred forceps of all kinds, from artery forceps to stomach clamps. Several major operating sets and old fashioned amputating sets were received with great gratitude. There were a number of bone instruments, some very good knives, although not as many as we would have liked; a good number of scissors, syringes, trocars, specula, catheters, sounds, tonsillotomes, trephines, and special instruments too numerous to mention. Many of them would be difficult to buy to-day because sold out, and a conservative estimate of their worth would be from twenty-five hundred to three thousand dollars. Many needles, sutures, ligatures and various dressings not included in the foregoing enumeration were received.

The committee feels that their effort has been worth while and wishes to extend their thanks to all who have contributed instruments and labor or money for their repair, and thus helped their bit in a good cause.

Since the last acknowledgment the following have contributed: Drs. F. E. Burdick and W. R. White, Mrs. E. F. Walker, Miss Mary J. Perrin, Miss Myral M. Sutherland, Miss Mary Miller, Miss Annie Miller, Rev. Marion Law and the Girls' Friendly Society of St. Paul's.

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